

**WE CLAIM AS OUR INVENTION:**

1. A diagnostic device comprising:  
an arrangement for generating raw data representing contents of a volume;  
a computer connected to said arrangement for calculating gray-scale values,  
representing a three-dimensional image of said volume contents, from  
said raw data;  
an image system connected to said computer for generating image signals,  
according to an algorithm employing a trapezoidal transfer function which  
assigns at least one optical property to the respective gray-scale values,  
from said gray-scale values;  
a monitor connected to said image system and supplied with said image signals  
for displaying said three-dimensional image;  
a user-operable input unit connected to said image system; and  
said image system generating a histogram distribution of said gray-scale values  
and displaying user interface graphics on said monitor including a  
histogram window in which said histogram distribution is displayed, said  
image system in said graphics also displaying a symbolic trapezoidal  
transfer function with a plurality of input fields respectively associated with  
different points of said symbolic trapezoidal transfer function, said input  
unit allowing entries into said input fields to select the trapezoidal transfer  
function employed in said algorithm, and said image system inserting a  
representation of the selected trapezoidal transfer function in said  
histogram window.

2. A diagnostic device as claimed in claim 1 wherein said image system displays a selection bar in said graphics and wherein said input unit allows one of a plurality of transfer functions identified by said selection bar to be selected for representation in said graphics.

3. A diagnostic device as claimed in claim 2 wherein said image system represents all of said plurality of trapezoidal transfer functions, which are selectable via said selection bar, in said histogram window, and wherein said image system marks the trapezoidal transfer function in said histogram window that is selected via said selection bar.

4. A diagnostic device as claimed in claim 3 wherein said image system marks the selected trapezoidal transfer function at said points of said symbolic trapezoidal transfer function.

5. A diagnostic device as claimed in claim 1 wherein said symbolic trapezoidal transfer function has corner points, and wherein said input fields are respectively associated with said corner points and wherein said input unit allows, by respective entries in said input fields, selection of said corner points and thus selection of their respective gray-scale range.

6. A diagnostic device as claimed in claim 1 wherein said at least one optical property is selected from the group consisting of brightness, color and transparency, and wherein said image system displays an input field in said graphics allowing said at least one optical property to be varied via said input unit.

7. A diagnostic device as claimed in claim 1 wherein said histogram distribution displayed in said histogram window has a gray-scale value range, and wherein said image system displays a scroll bar in said graphics allowing, via said input unit, variation of said gray-scale range.

8. A diagnostic device as claimed in claim 1 wherein said image system generates said image signals according to a volume rendering algorithm.

9. A diagnostic device as claimed in claim 1 wherein said image system comprises a memory in which a plurality of different trapezoidal transfer functions are stored, and wherein said image system displays an input field in said graphics allowing selection, via said input unit, of one of the trapezoidal transfer functions stored in said memory for use as said trapezoidal transfer function employed in said algorithm.